Figure 9

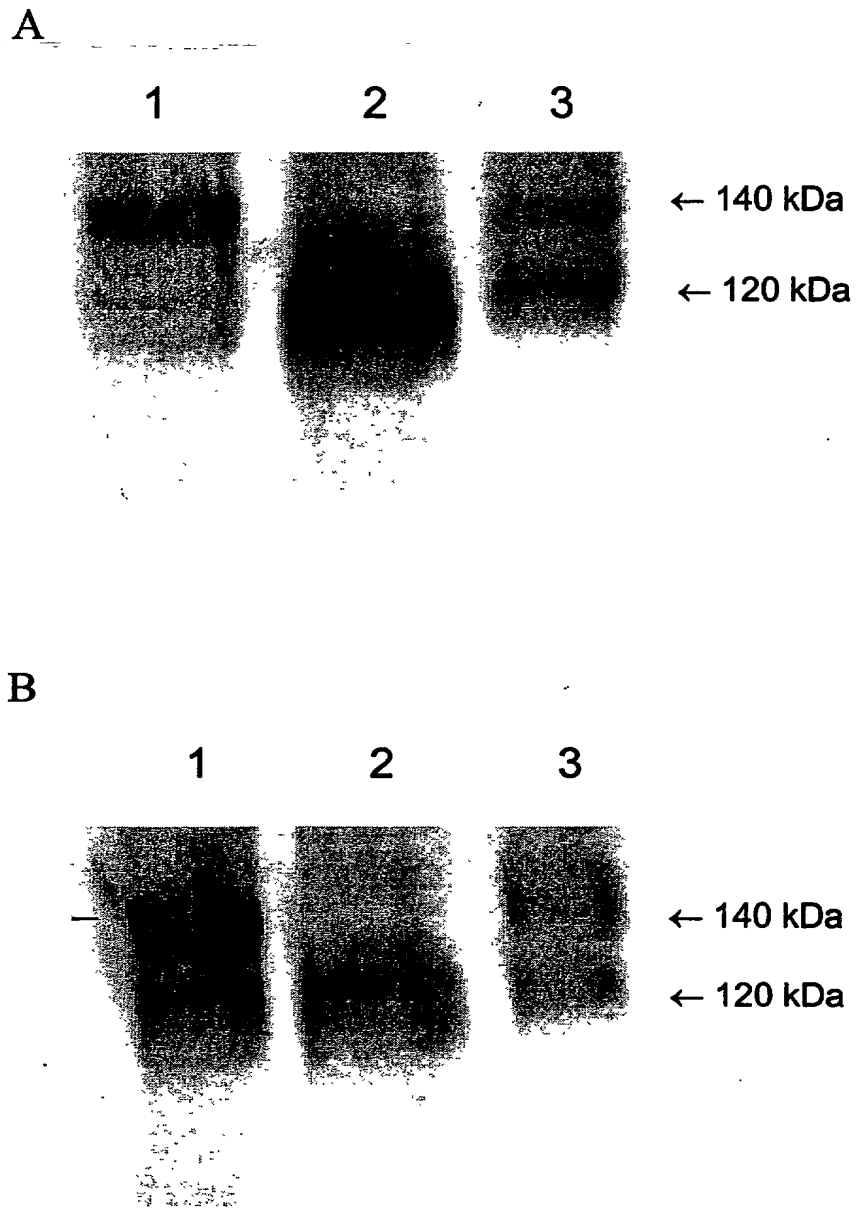
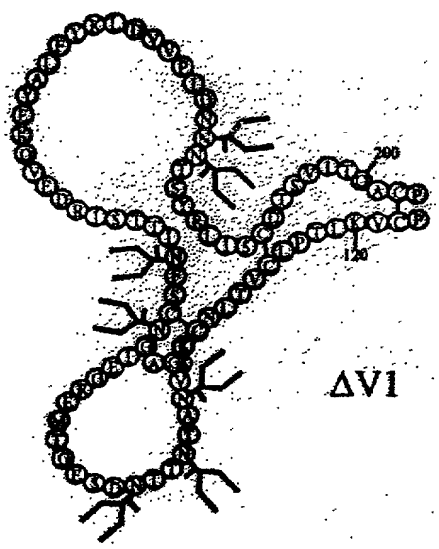
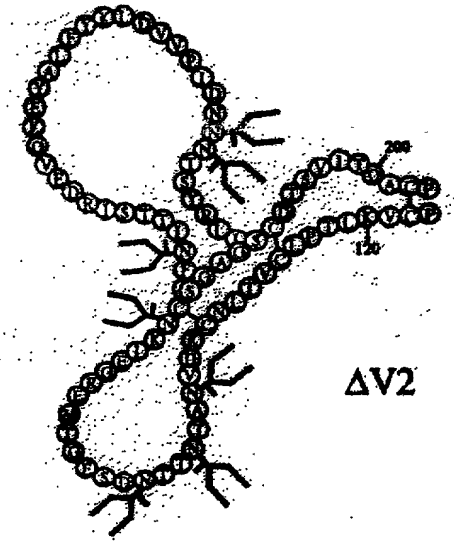


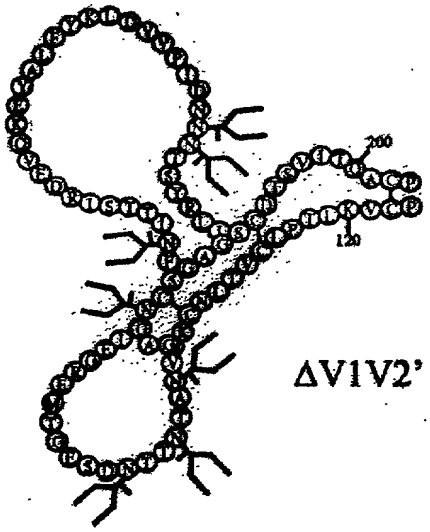
Figure 10



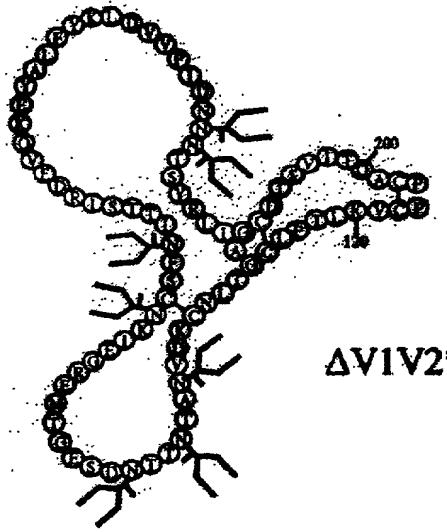
ΔV1



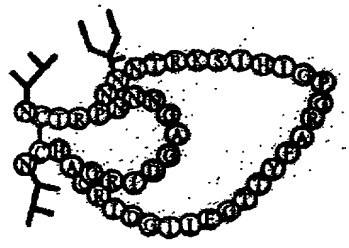
ΔV2



ΔV1V2'



ΔV1V2*

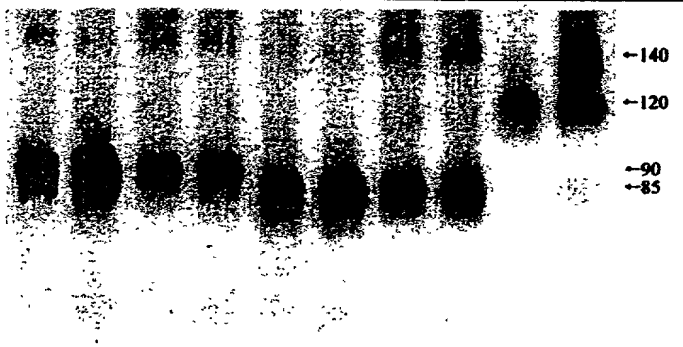


ΔV3

Figure 11

A

wt ΔV1V2*V3		CC ΔV1V2*V3		wt ΔV1V2*V3 N357Q N398Q		CC ΔV1V2*V3 N357Q N398Q		wt		envelope protein
2G12	F91	2G12	F91	2G12	F91	2G12	F91	F91	F91	antibody
1	2	3	4	5	6	7	8	9	10	lane



B

wt	ΔV1		ΔV2		ΔV3		ΔV1V2'		ΔV1V2*		ΔV1V2*V3		protein
CC		CC		CC		CC		CC		CC		CC	cysteines
1	2	3	4	5	6	7	8	9	10	11	12	13	lane

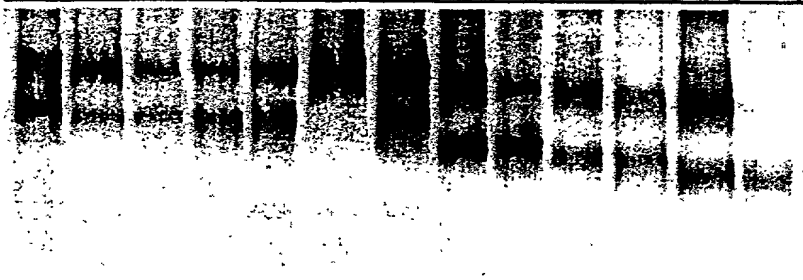
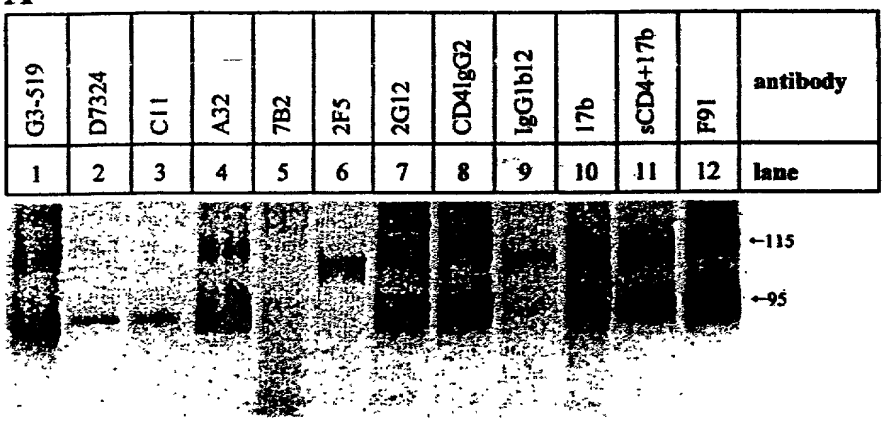


Figure 12

A


G3-519
D7324
C11
A32
7B2
2F5
2G12
CD4IgG2
IgG1b12
17b
sCD4+17b
F91
antibody
1
2
3
4
5
6
7
8
9
10
11
12
lane
←115
←95

B

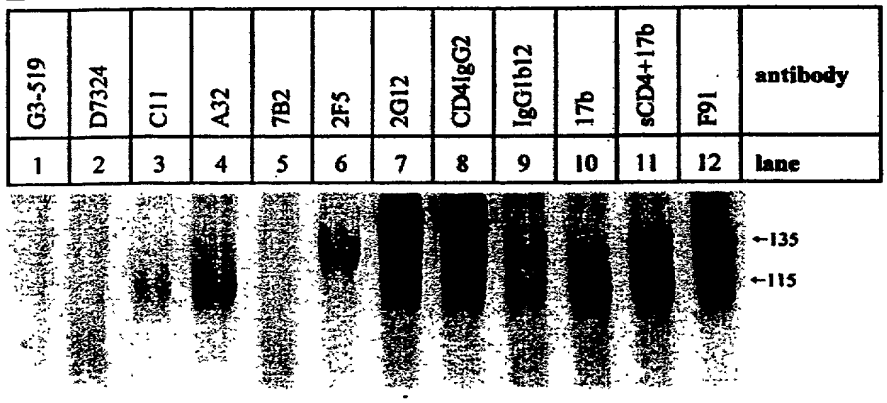

G3-519
D7324
C11
A32
7B2
2F5
2G12
CD4IgG2
IgG1b12
17b
sCD4+17b
F91
antibody
1
2
3
4
5
6
7
8
9
10
11
12
lane
←135
←115

Figure 13

HIV-1_{JR-FL} SOS gp140

(a)

```
1     GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51    AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101   AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151   CCACAAGAAGTAGTATTGGAAAATGTAACAGAACATTTTAACATGTGGAA
201   AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251   AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT
301   TGCAAGGATGTGAATGCTACTAATACCACTAATGATAGCGAGGGAACGAT
351   GGAGAGAGGAGAAATAAAAAACTGCTCTTTCAATATCACCACAAGCATAA
401   GAGATGAGGTGCAGAAAGAATATGCTCTTTTTTATAAACTTGATGTAGTA
451   CCAATAGATAATAATAATACCAGCTATAGGTTGATAAGTTGTGACACCTC
501   AGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAATTCCCATAC
551   ATTATTGTGCCCCGGCTGGTTTTGCGATTCTAAAGTGTAATGATAAGACG
601   TTCAATGGAAAAGGACCATGTAAAAATGTCAGCACAGTACAATGTACACA
651   TGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGGCAGTCTAG
701   CAGAAGAAGAGGTAGTAATTAGATCTGACAATTTCACGAACAATGCTAAA
751   ACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGTACAAGACC
801   CAACAACAATACAAGAAAAAGTATACATATAGGACCAGGGAGAGCATTTT
851   ATACTACAGGAGAAATAATAGGAGATATAAGACAAGCACATTGTAACATT
901   AGTAGAGCAAAATGGAATGACACTTTAAAACAGATAGTTATAAAATTAAG
951   AGAACAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTCAGGAGGGG
1001  ACCCAGAAATTGTAATGCACAGTTTTAATTGTGAAGGAGAATTTTTCTAC
1051  TGTAATTCAACACAACTGTTTAATAGTACTTGGAATAATAATACTGAAGG
1101  GTCAAATAACACTGAAGGAAATACTATCACACTCCCATGCAGAATAAAAC
1151  AAATTATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCCTCCC
1201  ATCAGAGGACAAATTAGATGTTCATCAAATATTACAGGGCTGCTATTAAC
1251  AAGAGATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAGACCTGGAG
1301  GAGGAGATATGAGGGACAATTGGAGAAGTGAATTCTATAAATATAAAGTA
1351  GTAAAAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAGAGAAGAGT
1401  GGTGCAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTTCCTTGGGT
1451  TCTTGGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGACACTGACG
1501  GTACAGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTT
1551  GCTGAGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCACAGTCTGGG
1601  GCATCAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAGGG
1651  GATCAACAGCTCCTGGGGATTTGGGGTTGCTCTGGAAAACTCATTTGCTG
1701  CACTGCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCTAGATAGGA
1751  TTTGGAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTGACAATTAC
1801  ACAAGCGAAATATACACACTAATTGAAGAATCGCAGAACCAACAAGAAAA
1851  GAATGAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTTGTGGAATT
1901  GGTTTGACATAACAAACTGGCTGTGGTAT
```

Figure 13

(b)

```
30    VEKLWVTVYY GVPVWKEATT TLFCASDAKA YDTEVHNVWA THACVPTDPN
80    PQEVVLENVT EHFNMWKNNM VEQMQEDIIS LWDQSLKPCV KLTPLCVTLN
130   CKDVNATNTT NDSEGTMERG EIKNCSFNIT TSIRDEVQKE YALFYKLDVV
180   PIDNNNTSYR LISCDTSVIT QACPKISFEP IPIHYCAPAG FAILKCNDKT
230   FNGKGPCKNV STVQCTHGIR PVVSTQLLLN GSLAEEEVVI RSDNFTNNAK
280   TIIVQLKESV EINCTRPNNN TRKSIHIGPG RAFYTTGEII GDIRQAHCNI
330   SRAKWNDTLK QIVIKLREQF ENKTIVFNHS SGGDPEIVMH SFNCEGEFFY
380   CNSTQLFNST WNNNTEGSNN TEGNTITLPC RIKQIINMWQ EVGKAMYAPP
430   IRGQIRCSSN ITGLLLTRDG GINENGTEIF RPGGGDMRDN WRSEFYKYKV
480   VKIEPLGVAP TKCKRRVVQR EKRAVGIGAV FLGFLGAAGS TMGAASMTLT
530   VQARLLLSGI VQQQNNLLRA IEAQQRMLQL TVWGIKQLQA RVLAVERYLG
580   DQQLLGIWGC SGKLICCTAV PWNASWSNKS LDRIWNNMTW MEWEREIDNY
630   TSEIYTLIEE SQNQQEKNEQ ELLELDKWAS LWNWFDITNW LWY
```

Figure 14

HIV-1_{JR-FL} ΔV1V2* SOS gp140

(a)

```
1     GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51    AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101   AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151   CCACAAGAAGTAGTATTGGAAAATGTAACAGAACATTTTAACATGTGGAA
201   AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251   AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGGTGCAGGATGT
301   GACACCTCAGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAAT
351   TCCCATACATTATTGTGCCCCGGCTGGTTTTGCGATTCTAAAGTGTAATG
401   ATAAGACGTTCAATGGAAAAGGACCATGTAAAAATGTCAGCACAGTACAA
451   TGTACACATGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGG
501   CAGTCTAGCAGAAGAAGAGGTAGTAATTAGATCTGACAATTTCACGAACA
551   ATGCTAAAACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGT
601   ACAAGACCCAACAACAATACAAGAAAAAGTATACATATAGGACCAGGGAG
651   AGCATTTTATACTACAGGAGAAATAATAGGAGATATAAGACAAGCACATT
701   GTAACATTAGTAGAGCAAAATGGAATGACACTTTAAAACAGATAGTTATA
751   AAATTAAGAGAACAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTC
801   AGGAGGGGACCCAGAAATTGTAATGCACAGTTTTAATTGTGGAGGAGAAT
851   TTTTCTACTGTAATTCAACACAACTGTTTAATAGTACTTGGAATAATAAT
901   ACTGAAGGGTCAAATAACACTGAAGGAAATACTATCACACTCCCATGCAG
951   AATAAAACAAATTATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATG
1001  CCCCTCCCATCAGAGGACAAATTAGATGTTCATCAAATATTACAGGGCTG
1051  CTATTAACAAGAGATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAG
1101  ACCTGGAGGAGGAGATATGAGGGACAATTGGAGAAGTGAATTATATAAAT
1151  ATAAAGTAGTAAAAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAG
1201  AGAAGAGTGGTGCAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTT
1251  CCTTGGGTTCTTGGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGA
1301  CACTGACGGTACAGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAG
1351  AACAATTTGCTGAGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCAC
1401  AGTCTGGGGCATCAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGAT
1451  ACCTAGGGGATCAACAGCTCCTGGGGATTTGGGGTTGCTCTGGAAAACTC
1501  ATTTGCTGCACTGCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCT
1551  GGATAGGATTTGGAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTG
1601  ACAATTACACAAGCGAAATATACACCCTAATTGAAGAATCGCAGAACCAA
1651  CAAGAAAAGAATGAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTT
1701  GTGGAATTGGTTTGACATAACAAACTGGCTGTGGTAT
```

Figure 14

(b)

30 VEKLWVTVYY GVPVWKEATT TLFCASDAKA YDTEVHNVWA THACVPTDPN
80 PQEVVLENVT EHFNMWKNNM VEQMQEDIIS LWDQSLKPCV KLTPLCGAGC
130 DTSVITQACP KISFEPIPIH YCAPAGFAIL KCNDKTFNGK GPCKNVSTVQ
180 CTHGIRPVVS TQLLLNGSLA EEEVVIRSDN FTNNAKTIIV QLKESVEINC
230 TRPNNNTRKS IHIGPGRAFY TTGEIIGDIR QAHCNISRAK WNDTLKQIVI
280 KLREQFENKT IVFNHSSGGD PEIVMHSFNC GGEFFYCNST QLFNSTWNNN
330 TEGSNNTEGN TITLPCRIKQ IINMWQEVGK AMYAPPIRGQ IRCSSNITGL
380 LLTRDGGINE NGTEIFRPGG GDMRDNWRSE LYKYKVVKIE PLGVAPTKCK
430 RRVVQREKRA VGIGAVFLGF LGAAGSTMGA ASMTLTVQAR LLLSGIVQQQ
480 NNLLRAIEAQ QRMLQLTVWG IKQLQARVLA VERYLGDQQL LGIWGCSGKL
530 ICCTAVPWNA SWSNKSLDRI WNNMTWMEWE REIDNYTSEI YTLIEESQNQ
580 QEKNEQELLE LDKWASLWNW FDITNWLWY

Figure 15

HIV-1_{JR-FL} ΔV3 SOS gp140

(a)

```
1     GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51    AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101   AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151   CCACAAGAAGTAGTATTGGAAAATGTAACAGAACATTTTAACATGTGGAA
201   AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251   AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT
301   TGCAAGGATGTGAATGCTACTAATACCACTAATGATAGCGAGGGAACGAT
351   GGAGAGAGGAGAAATAAAAAACTGCTCTTTCAATATCACCACAAGCATAA
401   GAGATGAGGTGCAGAAAGAATATGCTCTTTTTTATAAACTTGATGTAGTA
451   CCNATAGATAATAATAATACCAGCTATAGGTTGATAAGTTGTGACACCTC
501   AGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAATTCCCATAC
551   ATTATTGTGCCCCGGCTGGTTTTGCGATTCTAAAGTGTAATGATAAGACG
601   TTCAATGGAAAAGGNCCATGTAAAAATGTCAGCACAGTNCAATGTACACA
651   TGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGGCAGTCTAG
701   CAGAAGAAGAGGTAGTAATTAGATCTGACAATTTCACGAACAATGCTAAA
751   ACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGTACAAGACC
801   CAACAACAATGGAGCCGGCGATATAAGACAAGCACATTGTAACATTAGTA
851   GAGCAAAATGGAATGACACTTTAAAACAGATAGTTATAAAATTAAGAGAA
901   CAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTCAGGAGGGGACCC
951   AGAAATTGTAATGCACAGTTTTAATTGTGGAGGAGAATTTTTCTACTGTA
1001  ATTCAACACAACTGTTTAATAGTACTTGGAATAATAATACTGAAGGGTCA
1051  AATAACACTGAAGGAAATACTATCACACTCCCATGCAGAATAAAACAAAT
1101  TATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCCTCCCATCA
1151  GAGGACAAATTAGATGTTCATCAAATATTACAGGGCTGCTATTAACAAGA
1201  GATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAGACCTGGAGGAGG
1251  AGATATGAGGGACAATTGGAGAAGTGAATTATATAAATATAAAGTAGTAA
1301  AAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAGAGAAGAGTGGTG
1351  CAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTTCCTTGGGTTCTT
1401  GGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGACACTGACGGTAC
1451  AGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTTGCTG
1501  AGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCACAGTCTGGGGCAT
1551  CAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAGGGGATC
1601  AACAGCTCCTGGGGATTTGGGGTTGCTCTGGAAAACTCATTTGCTGCACT
1651  GCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCTGGATAGGATTTG
1701  GAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTGACAATTACACAA
1751  GCGAAATATACACCCTAATTGAAGAATCGCAGAACCAACAAGAAAAGAAT
1801  GAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTTGTGGAATTGGTT
1851  TGACATAACAAAATGGCTGTGGTAT
```

Figure 15

(b)

```
30    VEKLWVTVYY GVPVWKEATT TLFCASDAKA YDTEVHNVWA THACVPTDPN
80    PQEVVLENVT EHFNMWKNNM VEQMQEDIIS LWDQSLKPCV KLTPLCVTLN
130   CKDVNATNTT NDSEGTMERG EIKNCSFNIT TSIRDEVQKE YALFYKLDVV
180   XIDNNNTSYR LISCDTSVIT QACPKISFEP IPIHYCAPAG FAILKCNDKT
230   FNGKXPCKNV STXQCTHGIR PVVSTQLLLN GSLAEEEVVI RSDNFTNNAK
280   TIIVQLKESV EINCTRPNNN GAGDIRQAHC NISRAKWNDT LKQIVIKLRE
330   QFENKTIVFN HSSGGDPEIV MHSFNCGGEF FYCNSTQLFN STWNNNTEGS
380   NNTEGNTITL PCRIKQIINM WQEVGKAMYA PPIRGQIRCS SNITGLLLTR
430   DGGINENGTE IFRPGGGDMR DNWRSELYKY KVVKIEPLGV APTKCKRRVV
480   QREKRAVGIG AVFLGFLGAA GSTMGAASMT LTVQARLLLS GIVQQQNNLL
530   RAIEAQQRML QLTVWGIKQL QARVLAVERY LGDQQLLGIW GCSGKLICCT
580   AVPWNASWSN KSLDRIWNNM TWMEWEREID NYTSEIYTLI EESQNQQEKN
630   EQELLELDKW ASLWNWFDIT KWLWY
```